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Science and Technology for Tomorrow's Aerospace Forces

Success Story

ADT RESEARCH TEAM ACHIEVES OUTSTANDING SUCCESS

The Active Denial Technology (ADT) uses a powerful, efficient transmitter to send a narrow beam of energy towards an adversary. Traveling at the speed of light, the energy reaches the person and penetrates about 1/3 of a millimeter into the skin, quickly heating up the skin's surface. Within seconds, an individual feels intense pain that stops when ADT users shut off the transmitter or when the adversary moves out of the beam. Despite the pain, the technology does not cause injury because of the low-energy levels used. ADT exploits a natural defense mechanism that helps to protect the human body from damage.

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Accomplishment

The Directed Energy Directorate and Human Effectiveness Directorate ADT Research Team completed a US Air Force Force Protection Battlelab initiative and demonstration in the field using an ADT technology demonstration system. These field tests consisted of a demonstration of power density at range, and researchers greatly exceeded all the exit criteria.

The ADT Research Team then conducted a series of human effects experiments in field tests at tactically significant ranges and spot sizes. Researchers exposed 82 human test subject volunteers four times each to the millimeter-wave electromagnetic energy beam, and observed and documented the resulting repel effects. The ADT Research Team transitioned these basic research results into real hardware systems for potential use by the warfighter.

Background

The ADT Research Team recently completed a nine-month field test and demonstration of their non-lethal weapons technology. ADT is a breakthrough, non-lethal technology that uses millimeter-wave electromagnetic energy to stop, deter, and turn back an advancing adversary from relatively long range. Researchers expect ADT to save countless lives by providing a way to stop individuals without causing injury before a deadly confrontation develops.

The two directorates and the Department of Defense's Joint Non-Lethal Weapons Directorate developed this technology in response to needs for field commanders to have options short of the use of deadly force. Peacekeepers can use non-lethal technologies for protection of defense resources, peacekeeping, humanitarian missions, and other situations in which the use of lethal force is less than desirable.

Directed Energy
Emerging Technologies

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (01-DE-09)